

**a. SUMMARY INFORMATION PAGE**

**i. Project Title**

Supplemental Curtailment Enhancement and Wood Stove Change Out Program

**ii. Applicant Information**

State of Alaska

Department of Environmental Conservation

Division of Air Quality

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**iii. Total Project Cost**

a. Total Cost of Project..... \$14,717,265

b. EPA Funding Request..... \$14,717,265

c. Funding from Other Sources..... \$ 0

**iv. Project Period**

Anticipated dates: August 1, 2020 to July 31, 2025

**v. Short Project Description**

This application seeks to reduce direct fine particulate matter (PM<sub>2.5</sub>) emissions in the Fairbanks North Star Borough (FNSB) nonattainment area through a multi-pronged approach: increased compliance of solid fuel burn bans, focused reduction of No Other Alternative Source of Heat (NOASH) waived homes, and expanded woodstove change outs & conversions. The approach will leverage technologies including the use of infrared cameras, two new highway message signs, upgrade of 68 NOASH/burn ban waived households to eliminate the need for a waiver from curtailments, 1,510 solid fuel heating change outs, conversions or removals (for a total of 1,578 devices), a bounty program, and annual winter season compliance surveys to measure effectiveness.

**vi. Place of Performance**

Fairbanks, AK Nonattainment Area

**vii. DUNS Number**

8093868570000

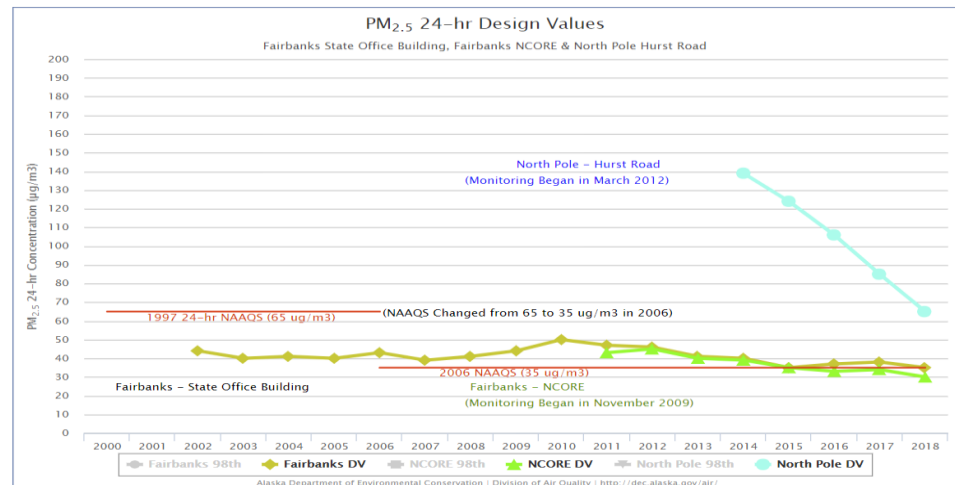
## Section 1 - Project Summary & Approach

### A. Ongoing, Significant Emissions Reductions & Consideration of Other Activities

Fairbanks has some of the highest recorded 24-hour levels of fine particulate matter (PM<sub>2.5</sub>) in the nation. Its 2016-2018 24-hour PM<sub>2.5</sub> design value, as shown in Figure 1, is 65 µg/m<sup>3</sup>, 185% above the 2006 24-hour National Ambient Air Quality Standard (NAAQS) of 35 µg/m<sup>3</sup>. Large reductions in PM<sub>2.5</sub> are still required to meet the health-based standards.

Figure 1. PM<sub>2.5</sub> 24-hr Design Values

Because residential wood smoke is identified as the largest emission source category (Attachment A Emission Inventories) and the largest contributing source sector to ambient pollution levels, the projects in this grant application are all designed to reduce residential wood smoke pollution in conjunction with the state and local programs already in place. Projects focused on other source categories (e.g. mobile sources, point sources) were considered but ultimately rejected due to cost effectiveness and lack of impact to the ambient PM<sub>2.5</sub> levels.



A variety of control strategies and technologies are available to reduce residential wood smoke. A local Air Quality Stakeholders group was formed in 2018 with an objective to identify, evaluate and recommend community-based solutions to bring the area into compliance with federal air quality standards for fine particulates (PM<sub>2.5</sub>). During the Stakeholders process emission benefits of many control measures were quantified, as described in Section 2.B, the Stakeholders ultimately recommended a package of the most effective control measures for the community. These stakeholder recommendations were further evaluated for technical feasibility, ability to demonstrate quantifiable emission reductions, and the magnitude of the emission reductions. Based on this review, the following measures were chosen as elements for this application:

- Additional outreach and staffing to supplement existing staff for curtailment compliance (burn bans),
- Use of infrared cameras for enhanced curtailment observations,
- Two highway LED Dynamic Messaging Signs (DMS) for timely public awareness of curtailments,
- Continued funding for the Wood Stove Change Out Program (WSCOP),
- A new No Other Adequate Source of Heat (NOASH) waiver reduction effort,
- A bounty program to further incentivize removals throughout the nonattainment area, and
- Seasonal compliance rate surveys for the curtailment program.

Several project elements are designed to enhance the performance of the on-going curtailment program, initiated by the FNSB in 2015 and now implemented by the Alaska Department of Environmental Conservation (ADEC) through state regulation. Located just 150 miles south of the Arctic Circle, FNSB has some of the highest heating degree days in the country. The high cost of fuel oil, the dominant source of heat, combined with occasional fuel supply interruptions (e.g., ice storms, lost power supply, etc.) and the lack of natural gas infrastructure have encouraged the community to maintain alternate solid fuel heating sources such as wood stoves. While a curtailment program represents the largest near-term emission reduction potential and is being implemented by ADEC, care must be taken to secure and maintain community acceptance in order for success.

The emission reductions of the current curtailment program are dependent on: thresholds for calling Air Quality Alerts, accurate forecasting, the percentage of the community that notified about an Alert in a timely fashion, the percentage that complies, and the NOASH/waiver program that provides exceptions to the program. Input from the community and a technical review of the curtailment program showed:

- Alert thresholds were recently lowered to  $20\mu\text{g}/\text{m}^3$  and  $30\mu\text{g}/\text{m}^3$  for Stage 1 and Stage 2 Alerts. No additional improvements identified.
- ADEC and FNSB have worked cooperatively to develop a  $\text{PM}_{2.5}$  forecasting tool that considers: real-time local meteorological data, real-time local  $\text{PM}_{2.5}$  concentrations, weather forecasts, dispersion forecast, and emission rates. Over its eight winters of use it has been about 90% accurate in predicting an exceedance of the PM standard in the coming 24-hour period. No improvements identified.
- Alerts are distributed via: text messages, e-mail, social media, public service announcements, and online. Improvements identified including highway messaging signs and enhanced alert and curtailment outreach.
- ADEC has two existing staff dedicated to the burn ban program (field observations, QA/QC, issuance of letters, and corresponding with the public). Improvements identified include increased staffing and use of an infrared camera for observations.
- Exemption/waiver program: During Stage 1 Alerts only those with a Stage 1 waivers may burn. During a Stage 2 Alert only those with a justifiable reason for a NOASH may operate their SFBAs. The waiver program is more rigorous with changes initiated by ADEC, such as registration, verification of maintenance, dry wood requirements, installation requirements, and ensuring those with waivers still meet opacity requirements. Improvements identified include efforts to reduce the number of NOASH waived households.

Presented below is a description of each of the project elements that addresses an area for improvement. Collectively, they are projected to reduce direct  $\text{PM}_{2.5}$  emissions by 31.3 tons per year and 156.3 tons (lifetime); more information on the emission reduction estimates is provided in Section 1.C.

#### *Supplemental Staffing for Curtailment Compliance Support (ADEC)*

ADEC is responsible for calling and communicating alerts, as well as enforcing curtailment compliance in the nonattainment area. The curtailment enforcement for this project is intended to supplement current efforts during alerts through increased outreach (such as paid PSAs and multi-media information concerning alerts) and by adding staff presence throughout the day, especially in early morning, evenings, and weekends. It is during these times, outside of normal work hours, where additional enforcement support can increase the compliance rate resulting in emission reductions. Three seasonal staff will be hired for the six-month winter period each year. The seasonal staff will receive training to conduct observations including Method 9 certification (day and night).

During an alert, existing ADEC staff use available resources to drive public roadways making observations of resident's smoke stacks using GPS and predetermined compliance routes in order to maximize efficiency. Once observations are made, staff post process information using QA/QC procedures to identify and document non-compliance activity and issue compliance letters or initiate formal enforcement. Once an enforcement action begins, the Department attempts an Expedited Settlement Agreement to resolve the case with monetary penalty. Observations are tracked along with the number of letters written for informal and formal enforcement for use in reporting. When not conducting compliance routes (i.e. no stage alerts in effect), the project staff will be assisting in processing additional enforcement cases or conducting compliance assistance through home inspections and outreach.

#### *Infrared Camera Technology (ADEC)*

One of the limiting factors in conducting observations for the curtailment program is the day length. While the curtailment program is in effect October 1 through March 31, the majority of exceedances occur between

November 1 and February 28. Being located at 64.8° N latitude the day length is 7:46 (hours:minutes) on November 1 dropping to 3:42 on December 21 then rising to 9:59 on February 28. With observations limited to daylight hours, a fact that the residents are well aware of, the compliance rate will remain low. Infrared camera technology will allow ADEC staff the capability to observe known SFBA stacks during curtailment periods before and after sunset. Infrared cameras are capable of displaying temperature profiles, so the camera can be used to determine if a known SFBA stack is hot or cold thereby determining if the SFBA is operational. This grant will fund two infrared cameras.

### *Highway LED Dynamic Messaging Signs (DMS) (ADEC)*

Roadway dynamic messaging sign (DMS) systems have been implemented along roadway networks in many parts of the U.S. to communicate real-time roadway information and traffic congestion and safety information to motorists and to encourage specific driver or travel behavior.<sup>1</sup> Survey studies of the effectiveness of DMS systems<sup>2,3</sup> have found that large majorities (up to 80%) of motorists are aware of DMS and safety-related messages, and depending on the type of message, often indicated significant behavioral change<sup>1,2,4</sup> in response to the messages displayed. The DMS implemented through this proposed project will be used to alert thousands of residents commuting on a major highway corridors to air quality alerts and curtailments.

This project is proposing two locations for back-to-back signs, each of them would be approximately sized 21'x7'x4'. **Priority 1**, located on the Richardson Highway Mile Post (MP) 360.5 at median near Badger road, between Fairbanks and North Pole will address many North Pole residents regularly commuting along the Richardson Highway, the primary and most direct route connecting Fairbanks and North Pole. Based on DOT's 2017 Annual Average Daily Traffic (AADT) GIS Map, the section between Fairbanks and Badger Road sees over 25,000 daily commuters, making it the second highest traveled road. Siting highway signs along this section of roadway is the highest priority in order to notify as many North Pole residents as possible in a timely manner of air quality alerts being called. **Priority 2** is a heavily used bypass route, located at the Parks Highway MP 357/Mitchell Expressway near Geist Road exit and University of Alaska Fairbanks that sees over 16,000 daily commuters. Descriptions of basic site design, construction details, and sign operation have been developed and are available, but are not included due to page limitations.

Figure 2. DMS Priority Locations



### *Wood Stove Change Out Program (WSCOP)*

As with the 2016, 2017, and 2018 EPA Targeted Airshed Grant (TAG) change out and conversion grant awards, ADEC will partner with FNSB. FNSB manages multiple WSCOPs which have varying eligibility requirements and funding sources. The 2016 TAG WSCOP allows for solid fuel burning appliance (SFBA) to SFBA change outs while the 2017 and 2018 TAG converts SFBA's used as a sole, primary, secondary, or emergency backup heating source to non-SFBA's. FNSB is on track with all three currently awarded grants with respect to spending and emission reductions. Attachment B (Emission Reduction Calculations) includes a chart that shows how FNSB's WSCOP spending is tracking projections from these three existing TAGs.

<sup>1</sup> L. Boyle, G. Cordahi, et al., "Effectiveness of Safety and Public Service (PSA) Messages on Dynamic Message Signs (DMS)," prepared for Federal Highway Administration, Report No. FHWA-HOP-14-015, July 2014.

<sup>2</sup> R. Tay, A. de Barros, "Public Perceptions of the Use of Dynamic Message Signs," Journal of Advanced Transportation, Vol. 42, No. 1, pp. 95-110.

<sup>3</sup> E. Mitran, D. Cummins and A. Smithers, "Traffic Safety Messages on Dynamic Message Signs (DMS)," prepared for Louisiana Department of Transportation and Development, Report No. FHWA/LA.18/17-01TA-SA, May 2018.

<sup>4</sup> S. Knickerbocker, S. Wang, et al., "Analysis of Dynamic Advisory Messaging – Phase II," prepared for Iowa Department of Transportation, InTrans Project 16-591, August 2018.

Calculations based on inventory surveys estimate that approximately \$43 million is needed to convert or remove non-EPA certified wood stoves to EPA certified wood stoves or non-SFBAs in the FNSB Serious nonattainment area. As of the end of 2019, \$10.6 million has been expended to remove 354 SFBAs, convert 329 SFBAs to oil and gas, and change out 2,011 older, inefficient SFBAs to newer, cleaner SFBAs.

Similar to the previous TAG programs, under this grant there will be several eligible options for change outs. While the 2017 and 2018 TAG focused on conversion and did not offer a SFBA to SFBA option, several community partners and members of the public have requested that this option be included. The intention of the 2019/2020 program is to allow SFBA to SFBA but with specific limitations. The only allowable SFBA eligible to be installed must be either catalytically controlled cord wood or pellet fueled, EPA certified under federal reference method testing or the Integrated Duty Cycle (IDC), and meet a 2.0 g/hr certified emission rate. No devices certified using ASTM 3053 will be allowed. The expected ratio of SFBA to SFBA versus SFBA to conversions/removals is expected to remain constant at approximately 25% SFBA to SFBA and 75% conversions/removals. Gas fireplaces and other devices that are exclusively for aesthetic or decorative use continue to be ineligible for conversion or removal under this program. This grant application will also allow for a bounty program, available throughout the entire nonattainment area to assist with emission reductions outside the hot spots where previous TAG programs and the 2019-2020 WSCOP funding is prioritized. Details on emission benefits are described in the control benefits attachment.

To maximize the air quality benefit of the project, WSCOP applications are evaluated through a prioritization matrix, based on three parameters: air quality control zone (AQCZ), emission reductions, and burn frequency. Eligible structures or appliances must be located inside the AQCZ, which is further broken down into four sub-zones ranging from best to worst air quality. Zone designation is based on data gathered from 2008 to 2018 through FNSB's hot spot guidance program, which used vehicle-mounted low cost pDR monitors to gather daily data throughout the AQCZ from October through March. Emission reductions are based on the existing appliance, burn frequency, and the replacement option with larger emission reductions available for removing the SFBA and converting to a non-SFBA appliance; conversions are prioritized higher than SFBA to SFBA change outs.

Completed WSCOP applications must include a physical address, what SFBAs will be converted or removed, and what program the applicant wishes to participate in (sole, primary, secondary, or emergency backup source of heat). FNSB will process the application, including taking any initial pre-verification pictures, to determine applicant eligibility. Each application is scored based on the three parameters and must meet a minimum score for program eligibility. To ensure heating appliances are properly sized to meet space heating needs efficiently and are correctly installed, approved applicants are required to use a FNSB-listed installer.

Removed SFBAs must be brought to the FNSB Air Quality office or other authorized location for destruction. A Certificate of Destruction is issued to the appliance owner by the FNSB. SFBAs are destroyed to ensure that devices cannot be placed back into operation, which results in a net reduction of emissions. Upon WSCOP application approval, property owners must sign a deed restriction to prevent any future installations of SFBAs on participating properties (for those converting to liquid fuel). All approved applicants for conversions under this program will require a deed restriction preventing future installation of SFBAs on participating properties.

#### *No Other Adequate Source of Heat (NOASH) Reduction Program*

A new program element, NOASH reduction program, will be added to the WSCOP. ADEC's NOASH program requires a justification for obtaining a NOASH waiver, which authorizes the home owner to use the SFBA during both stage 1 and 2 air quality alerts. Currently 45% of NOASH waivers are issued because the homes are equipped with inadequate or undersized heating devices, and 22% of NOASH waivers are issued because the homes are equipped with malfunctioning or defective heating devices. The intent of the NOASH reduction effort is to offer assistance to those with an inadequate or malfunctioning heating device so that they no longer need or are

eligible for a waiver.

For the NOASH reduction effort, ADEC will require all NOASH waiver applicants to submit an application to the FNSB WSCOP prior to issuance of the NOASH waiver. FNSB will present available options to the applicant however participation in the program will remain voluntary. The NOASH reduction program will allow replacement, repair, or upgrade of the existing inadequate, undersized, malfunctioning, and/or defective non-SFBA heating appliance. Participation in the NOASH reduction program will not require device destruction, as emission reductions are realized by removing an exemption from the curtailment program. ADEC's new regulations will make it harder for NOASH waivers, especially for older devices and the malfunctioning or defective device justification which should incentivize voluntary participation in this effort.

In order to guarantee emission reductions, program participation will require: registration of all SFBA on the property with ADEC, a deed restriction to ensure no additional devices, and any SFBA on property meet current ADEC requirements (properly installed, dry wood supply, maintained, less than 15 years old, meets state emission rating requirements). Program participation will render the property ineligible for a NOASH application, and the specific SFBA on the property will not be eligible for any additional or future WSCOP funding. The property will remain eligible for a Stage 1 waiver (provided all existing and future requirements are met). The NOASH reduction incentive levels will be lower than incentive levels for converting an SFBA to a cleaner burning appliance.

An estimated 1,578 SFBAs are expected to be converted or removed through this grant based on previous program statistics. TAG program participants through December 2019 qualified for an average reimbursement of \$6,288. Due to the range of options, average reimbursement rate varies significantly based on the type of conversion or removal chosen. In an effort to promote cleaner alternatives to SFBAs, financial incentives increase with corresponding increases in emission reductions; therefore, while the average reimbursement rate may rise and the corresponding number of devices may fall, the environmental outcome of reduced emissions will still be realized. Appliance conversion or removal calculations will account for emission reductions from lower PM<sub>2.5</sub> emission factors as well as replacement appliance heating efficiency improvements (where applicable). Table 2 Reimbursement Rate and Projections in Attachment B provides details of the reimbursement rate and the projected number of change outs, which were used for the emission reduction calculations.

### *Surveys & Assessments (ADEC)*

Compliance with curtailments is a poorly measured metric that critically impacts estimates of wood burning emissions and progress towards attainment of the PM<sub>2.5</sub> standard. A program that provides reliable estimates of compliance is needed to aid the management of the air quality program and quantify emission benefits. ADEC proposes to use TAG funding to collect this information by conducting two 100+ sample surveys in both Fairbanks and North Pole along routes constructed from unbiased samples of known wood burning households on Alert days. The goal each winter will be to conduct one survey in each location in the November-December timeframe and another survey in the January –February timeframe; if opportunity allows or necessity requires, surveys may be conducted in March. An analysis of each survey will be prepared as the data becomes available to aid air quality program management decisions. A summary of community compliance will be documented at the end of each winter and used to support SIP planning activity, track progress towards attainment and aid resource allocation decisions. Key tasks include:

- Assembly of an unbiased sample of homes equipped with wood burning appliances (the target is 100+ separate homes in Fairbanks and 100+ separate homes in North Pole) – ADEC's new SFBA registration program should assist in this task;
- The development of survey routes to be driven with a target of 100 homes+ observed during each winter season in each community;
- The collected observations will be loaded into a database and statistical spreadsheet to quantify compliance, assess precision, etc., and, along with analysis of speciation data collected on Alert and non-Alert days, assess the compliance effects.



ADEC will conduct each of these tasks. TAG funded supplemental staff will assist with data collection, as available, and perform survey data entry during non-Alert days. ADEC existing non-TAG funded staff and non-TAG contractual staff will also assist in this effort.

### B. Emissions Inventory & Progress towards Attainment

Emission inventories for the nonattainment area have been compiled for the Serious SIP and are shown in Table 1. A complete description of the emission inventory is provided in Attachment A.

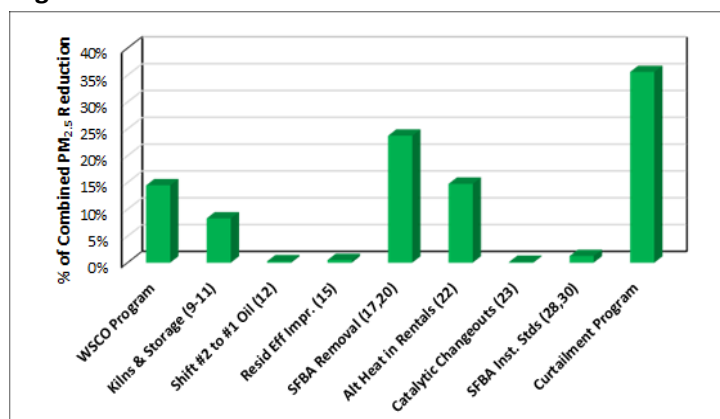
**Table 1. 2019 Control Episode Average Daily Emissions by Source Sector (tons/day)**

Source Sector	PM <sub>2.5</sub>	NOx	SO <sub>2</sub>	VOC	NH <sub>3</sub>
Point	0.83	10.63	7.13	0.09	0.020
Area, Space Heat, All	2.11	2.44	3.87	8.62	0.132
Area, Space Heat, Wood	1.95	0.40	0.14	8.40	0.086
Area, Space Heat, Oil	0.07	1.83	3.61	0.10	0.004
Area, Space Heat, Coal	0.08	0.05	0.09	0.11	0.014
Area, Space Heat, Other	0.01	0.17	0.02	0.01	0.029
Area, Other	0.20	0.25	0.02	2.35	0.049
On-Road Mobile	0.14	1.83	0.01	2.86	0.038
Non-Road Mobile	0.24	1.21	10.62	0.41	0.000
<b>TOTALS</b>	<b>3.53</b>	<b>16.36</b>	<b>21.64</b>	<b>14.33</b>	<b>0.238</b>

In November 2018 an analysis of the emission inventory was presented to the Air Quality Stakeholders Group that compared relative reductions of control measures, shown in Figure 3. The Curtailment Program reductions in Figure 3 reflect an increase in the compliance rate from its currently estimated level of 20% to an “optimistic” 50% rate. As shown in Figure 3, this

increased Curtailment Program compliance represents the largest near-term reduction in PM<sub>2.5</sub> emissions. The WSCOP and SFBA Removals also provide significant benefits.

**Figure 3. Emission Control Measure Reduction Potential**



Based on the 2019 Control Emission Inventory in Attachment A, funding through this grant is projected to supply a 43% reduction in home heating PM<sub>2.5</sub> emissions in the nonattainment area, providing WSCOP and Curtailment Program reductions of 0.782 and 0.124 tons/day, respectively. These estimates reflect a total of 1,578 solid fuel device change outs (over a six-year period) and an increase in the Curtailment Program compliance rate of 5% (from 30% to 35%) and were based on methods consistent with the Serious Area SIP and are discussed in detail in Attachment B

(Emission Reduction Calculations).

### C. Innovative Emission Reductions

Since the curtailment program represents the largest near-term emission reduction potential for residential wood smoke (the largest emission source category in the FNSB nonattainment area), increasing curtailment compliance will result in the greatest emission reductions for the area. The most innovative strategy includes placing a highway LED Dynamic Messaging Signs to enhance timely public awareness of curtailments, hiring of three seasonal staff and the purchase of an infrared cameras to enhance curtailment compliance support during weekends and non-daylight hours, and compliance rate surveys to provide valuable insight for the quantification of emission reductions. The curtailment program is estimated to provide emission reductions of 0.124 tons/day which will contribute significantly to the projected 43% reduction in residential heating PM<sub>2.5</sub> emissions in the area.

### D. Roles and Responsibilities

ADEC will be responsible for supplemental compliance staffing, infrared camera technology, outreach regarding curtailments/alerts, and surveys & assessments. For the highway signs, ADEC will be responsible for calling and communicating alerts, as well as enforcing curtailment compliance in the nonattainment area. DOT will be formally

responsible for the construction of the signs. ADEC will provide alert messages to DOT, which will own the signs and be ultimately responsible for all messaging. FNSB will be formally responsible for administering the WSCOP, the bounty program, and the NOASH reduction effort. Attachment F consists of partnership letters between ADEC and DOT.

## **Section 2 – Community Benefits, Engagement and Partnerships**

### **A. *Community Benefits***

Although PM<sub>2.5</sub> is not currently available in EJSCREEN for Alaska, the Office of Air and Radiation (OAR), with the information contained in EPA's air quality database, has identified Fairbanks, Alaska as the second most polluted area for 2006 24-hour PM<sub>2.5</sub>. Most residents of Fairbanks and North Pole do not yet have access to affordable natural gas. As a result, the use of woodstoves during severe winter conditions impacts the air quality in the FNSB nonattainment area. All the residents, particularly the most sensitive groups such as children, the elderly, and those with preexisting respiratory and cardiovascular conditions are vulnerable and faced with greater environmental burdens. To protect their health, some children are avoiding recess during school while other individuals are moving away from FNSB. These burdens have negative impacts on the social and economic status of the Borough.<sup>5</sup> The proposed project is intended to increase curtailment compliance, enhance PM<sub>2.5</sub> emissions reductions, and promote positive health outcomes for those living and working in the FNSB nonattainment area.

As mentioned previously, residents of the Fairbanks North Star Borough nonattainment area experience colder temperatures and much higher numbers of heating degree days than in other parts of the country. This exacerbates the impact of control programs for those with economic hardship who rely on affordable wood heat. Many of those who qualify for a NOASH waiver cannot afford to fix or upgrade their non-SFBA. There will be a direct community benefit to reducing the number of households relying on NOASH waivers. Those residents in proximity to the NOASH household will have reduced PM<sub>2.5</sub> impacts during curtailment days. Overall, the community will benefit by removing devices that are continuously burning during curtailment periods and by potentially decreasing the overall number of Alert days as overall air quality improves.

### **B. *Community Engagement and Partnerships***

Community engagement and partnerships have been an integral component in the development of the Serious SIP for the nonattainment area. The results from those community engagement activities helped determine which projects to pursue for this grant application.

After a nearly year-long effort, the final Fairbanks AQ Stakeholder Group report was provided to EPA, ADEC, and FNSB in December 2018 (see: <http://www.co.fairbanks.ak.us/transportation/Pages/stakeholders.aspx>) There were 56 individual recommendations by the Air Quality Stakeholders group, and the following recommendations are in support of the projects for this grant application:

- 17a. Request to Congress and State of Alaska to fund \$40-million 2-year wood stove change out program.
- 35. Increase funding for curtailment enforcement.
- 36. Use infrared cameras to observe heat signature for solid-fuel heating device operations.
- 50. Include continued funding for highway signs in next Targeted Airshed Grant proposal.

Community engagement has been ongoing since the Stakeholder's Group completed its report, with the formation of an Air Quality coalition to ensure the community continues to have a voice on the issues. Public comments received on the draft Serious SIP are available on the ADEC website at:

<https://dec.alaska.gov/air/anpms/communities/fbks-pm2-5-2019-comments/>. ADEC and FNSB will continue to meet with various stakeholder groups to discuss the implementation of air quality programs including this effort and other projects to take in feedback and address concerns as appropriate.

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<sup>5</sup> <https://pgeproject.wordpress.com/2017/06/21/pm2-5-non-attainment-area-fairbanks-north-star-borough-ak/>  
ADEC 2019 Targeted Air Shed Grant Application  
RFA Number: EPA-OAR-OAQPS-20-01



### Section 3 - Project Sustainability

ADEC will continue to call alerts, communicate alerts on the new DMS in collaboration with DOT, and enforce compliance in the FNSB nonattainment area even after the lifetime of the project to promote the continued reduction and maintenance of PM<sub>2.5</sub> emissions. Curtailments will be a requirement of the SIP until attainment is reached and likely incorporated into the 20-year maintenance plans. After the lifecycle of the grant, DOT will look to incorporate the signs into the State Intelligent Transportation System (ITS) and continue to use the signs, not only for air quality but also for health and safety messaging. ADEC will also continue to meet with stakeholders in the community to educate and encourage people to stop using SFBA's when alerts are called.

### Section 4 – Environmental Results – Outcomes, Outputs, and Performance Measures

#### A. *Expected Project Outputs and Outcomes*

Outputs	Outcomes
Increased compliance and enforcement effort for evenings, early mornings, and weekends by addition of 3 seasonal staff.	Combined outcomes for supplemental curtailment program enhancement: Annual reduction of <b>3.7</b> tons of PM <sub>2.5</sub> Lifetime reduction of <b>18.5</b> tons of PM <sub>2.5</sub>
Inclusion of new technology (infrared camera) to extend viable hours for compliance observations.	
Display air quality alerts and curtailments at 12 strategically located highway sign sites.	
Reduce number of NOASH by 68.	Annual reduction (based on 2022 projected change outs) of <b>27.5</b> tons of PM <sub>2.5</sub> - Lifetime reduction of <b>137.7</b> tons of PM <sub>2.5</sub>
1,510 SFBA change outs, conversions, or removals.	
Total Devices Targeted for Project: <b>1,578</b>	Total Emission Reductions: <b>27.4</b> tons/yr, <b>136.8</b> tons

As outlined in the table above, this project will provide short term environmental outcomes in reduced emissions from increased compliance resulting from the enhanced compliance and enforcement efforts, including those resulting from increased observation times due to the use of infrared cameras and the increased public awareness of alerts from the dynamic messaging signs in Fairbanks and North Pole. Significant short- and long-term emission benefits will result from the additional WSCOP, bounty program, and NOASH reduction efforts.

#### B. *Performance Measures*

##### *Supplemental Curtailment Enhancement*

Performance of the supplemental curtailment enhancement program, including the DMS messaging, will be monitored through the compliance rate surveys using the method previously discussed. Surveys will be conducted at least twice during the 4-month season and each year. Attempts will be made to conduct observations at various times of the day and week, not just work/daylight hours.

##### *Wood Stove Change Out Program and NOASH Reduction Program*

The following metrics will be collected for each participant in the program: location, original appliance type, original appliance fuel usage, replacement appliance type (if applicable), and final reimbursement cost. From these metrics, emission reduction estimates will be made. Number of participants, final reimbursement cost, and emission reductions will be used to track, measure, and report progress towards achieving the expected outputs and outcomes. The NOASH reduction program performance measure is the removal of 61 currently, past, or requested waived households from eligibility in the waiver program.

#### C. *Performance Plan*

The roadway dynamic message sign is expected to drastically increase notification of curtailment alerts due to the high traffic counts at the preferred sign locations. DOT can provide monthly traffic counts to ADEC for tracking and reporting purposes. This information can then be compared to results from compliance surveys used to evaluate

curtailment compliance and progress toward attainment.

#### Wood Stove Change Out Program and NOASH Reduction Program

Change outs will be tracked and reported as required. It is difficult to predict the types and amounts of SFBA change outs, conversions, removals, and NOASH reductions and when they will occur during the grant period. The program is voluntary and the number of applicants in any one quarter is unpredictable; however, participation is most likely to occur during summer months. The projections are an estimate of future performance based on historical information and are not considered a target to be judged on a quarterly basis as the projections do not take into account issues such as seasonal variability. The projected versus actual results should be viewed as a qualitative check to ensure the program is progressing along the correct path, not to quantitatively compare the two values.

In order to estimate appliance-specific emission benefits, the emissions rating of the SFBA to be changed out, converted or removed will be logged and compared to the emission rating of the replacement appliance (or zeroed out if removed). Appliance-specific benefits from conversions will be calculated using test results and assumptions consistent with SIP inventory control measure benefit methods for the on-going WSCOPs. For uncertified devices, FNSB will use AP-42 emission factors for uncertified SFBA's to estimate emissions of the device being removed.

As part of the WSCOP application process, applicants are requested to provide information regarding the device age, cord/wood usage, and whether the device is a primary, secondary, or sole source of heat; however, due to the nature of the information coming from the applicant, the information is not wholly reliable.

FNSB will report on the number of change outs, conversions, removals, and NOASH reductions completed, replacement option of each change out, maximum reimbursement amount, the actual cost of completed change out, types of SFBA's removed, and types of converted appliances (if applicable). Using the SFBA type removed and the replacement option, PM<sub>2.5</sub> emission reductions and cost per ton of PM<sub>2.5</sub> emissions reduced will be estimated.

#### D. Timeline and Milestones

Project Timeline	Q1 = Jan - Mar, Q2 = Apr - Jun, Q3 = Jul - Sep, Q4 = Oct - Dec											
	CY 2020			CY 2021			CY 2022			CY 2023		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Highway Signs</b>												
Grant Award												
RSA to DOT												
Site Feasibility Study												
Final Site Selection												
Design												
Permitting												
Equipment Procurement												
Construction												
Operation												
<b>Curtailment Enforcement</b>												
Grant Award												
Curtailment Enforcement												
<b>Wood Stove Change Out Program</b>												
Grant Award												
Wood Stove Change Out Program												
<b>NOASH Reduction</b>												
Grant Award												
NOASH Reduction												
<b>Surveys and Assessments</b>												
Grant Award												
Surveys and Assessments												
<b>Reporting</b>												
Quarterly Reporting Due to EPA												
Annual Reports Due to EPA												
Final Report Due to EPA												

As soon as the grant is awarded, ADEC will establish reimbursable services agreements (RSA) with DOT to commence design and implementation of the DMS and with the Alaska Department of Commerce Community & Economic Development (DCCED) to allow for sub award of funds to the FNSB for the NOASH reduction and WSCOP elements of the grant. DOT timeline estimates are built around the short construction season; any unanticipated delays could move construction a year later than shown in the chart. The implementation of the curtailment enforcement enhancements will begin immediately (assuming that the grant is awarded in the fall) at ADEC to add three seasonal compliance enforcement staff, procure infrared cameras, finalize

survey protocols, conduct surveys, and oversee the grant.

Quarterly progress reports consisting of the actual vs. projected number of outputs/ outcomes and the estimated reduction of PM<sub>2.5</sub> emissions in ton per year (TPY) will be developed and submitted to EPA according to the following schedule: the 1<sup>st</sup> calendar quarter reports will be due April 30; the 2<sup>nd</sup> calendar quarter reports will be due July 31; the 3<sup>rd</sup> calendar quarter reports will be due October 31, the 4<sup>th</sup> quarter reports will be due January 31, and a final report will be due within 90 days of the project period end date (August 30, 2025).

### Section 5 – Programmatic Capability and Past Performance

#### A. Management, Completion, and Reporting Requirements

ADEC is responsible for grant oversight and fulfilling grant reporting requirements, including quarterly reports and the final report. ADEC will manage the grant in accordance with the Uniform Grant Guidelines. The ADEC Division of Air Quality will monitor all work conducted under this award and be responsible for all reporting requirements to the EPA. The Division has demonstrated programmatic and financial capability, successful implementation, and timely reporting through the historical and ongoing successful management of the State of Alaska's other air quality specific EPA grants:

- CFDA 66.605 – Performance Partnership Grants
  - Clean Air Act 105 grant; Radon; Pesticides; & Multipurpose Activities related to Air Quality
- CFDA 66.034 – Surveys, Studies, Investigations, Demonstrations & Special Purpose Activities relating to the Clean Air Act
- CFDA 66.202 – Congressionally Mandated Projects – Targeted Airshed

#### *Organizational Experience and Plan*

ADEC has a long history of partnering with other agencies to implement both federal and state funded programs. ADEC was awarded the FY-16, FY-17, and FY-18 TAS Grants and, in collaboration with FNSB, has been administering the grants for the WSCOP. A total of 320 change outs have been completed with 31.69 TPY as the estimated reduction in air pollutant emissions. More SFBAs are projected to be replaced, converted and repaired through 2022, 2023, and 2024 using the FY-16, FY-17, and FY-18 TAS Grants, respectively. The FY16 TAS Grant has been primarily used for SFBAs conversions/removals (75%) along with wood to wood change outs; the FY-17 TAS Grant for converting SFBAs used as sole, primary, secondary, or emergency backup heating sources to non-SFBAs, and the FY-18 TAS Grant for conversion or removal of SFBAs and expansion of marketing and outreach efforts.

ADEC also has a history of partnering with DOT on projects, the largest were funded under ARRA-DEIRA, and will partner with DOT for the DMS. DOT is responsible for the design, construction, operation, and maintenance of the state's transportation infrastructure systems, buildings, and other public facilities. DOT's Northern Region is headquartered in Fairbanks, is the most geographically diverse, and maintains more centerline miles of highway than the other Alaska Regions. DOT has significant experience managing funds from various sources, such as the Federal Highway Administration, and partnering with other agencies to develop and complete projects to meet community needs.

#### **B. Staff Expertise**

The staff that will be responsible for the various elements of the project have years of experience managing and overseeing different types of projects. A brief description of their experience and responsibilities can be found in Attachment C.

### **Section 6 – Leveraged Funding**

No cost share or match is proposed as part of this project application. This proposal is for a 100% EPA funded project, with no state cost share or match. The RFA states that a cost-share or match is not required for this application. The State of Alaska does not intend to contribute cost share or match; however, the DOT has already contributed significant staff time and resources to develop this project. For example, in addition to weekly meetings for project coordination, DOT has completed site visits to identify initial preferred sign site locations as well as researching requirements, such as technological needs, for this project partnership to be successful. FNSB will contribute staff time and resources to administering, managing, and marketing the WSCOP.

### **Section 7 – Budget**

#### **A. Expenditure of Awarded Funding**

##### Curtailment Compliance Enforcement

After the grant is awarded, ADEC will recruit and hire three seasonal staff to supplement existing compliance staff. In an average winter, ADEC anticipates approximately 30 curtailment days (variable and weather dependent) and is anticipating up to an additional 195 non-compliance observations per season with the additional project

staff. In addition, the grant will fund two infrared cameras to allow observations outside of daylight hours.

#### Highway LED Dynamic Messaging Signs (DMS)

After the grant is awarded, ADEC will establish an RSA with DOT for the DMS portion of the project. Upon receipt of funds, DOT will commence design work and solicit proposals for equipment procurement, construction, and installation. Construction will be scheduled as soon as weather permits, equipment is procured, and all necessary approvals have been granted. Quarterly reports will be submitted by ADEC during design and construction with annual reports being submitted after construction for the remainder of the grant period. A technical final report will be submitted at the close of the grant period.

Through earlier initial site determination, the priority sites were chosen for their sufficient median for sign installation. This minimizes potential project costs as only one foundation and one support pillar is required for two back-to-back DMS signs (one sign per traffic direction) and power and telecommunications connectivity will only need to be run once to each one site location, versus two connections. DOT design cost, consultant electrical design and in-house/consultant structural design for sign pole & bracket, materials & shipping, equipment and construction costs, for the highest priority two dual-sided sign assembly locations are included. These include the cost to bore under the highway to place power conduit to reach the planned median locations at the divided highway location. One dual-sided sign at each location would be capable of displaying 3 lines of 18-inch tall symbols with at least 14 symbols per line. Site work at the chosen location may require a NEPA analysis of Categorical Exclusion; additional geotechnical foundation work may be required due to ground stability issues from possible ice lenses and may require guardrail and/or crash cushions, therefore some contingency funds have been identified in the budget. Any funds remaining at completion of this activity will be reallocated towards curtailment enforcement. Any operational utility costs, such as electricity and telecommunications, are budgeted for the life of the grant. After the lifecycle of the grant, the responsibility for ongoing operational costs will be addressed in the RSA between DOT and ADEC. For post grant maintenance and repair costs DOT plans to incorporate the signs into the State Intelligent Transportation System (ITS).

#### Change out/Conversion & NOASH reduction program

After project award, DEC will establish a RSA with DCCED, the state's experts in grants to communities, who will sub-grant funds to the FNSB. Program operations will begin upon the acceptance of the sub-grant award funds by the FNSB Assembly and continue through the end of the project period or as funds allow. ADEC and DCCED will check-in regularly with FNSB on outcomes and performance measures as identified in the grant application and the final work plan. Quarterly reports will be submitted by ADEC during the implementation of the project with annual reports being submitted after construction for the remainder of the grant period. A technical final report will be submitted at the close of the grant period.

### **B. Reasonableness of Budget**

The reasonableness of the budget is illustrated by the total amount being requested. At roughly seventy-five percent of the allowable amount, ADEC is showing constraint, its experience in the program, and its partnerships with others. DEC is focusing on supplemental support and not looking to fund the entire curtailment program. DEC is only requesting funding and setting targets for change outs and conversions that FNSB staff can realistically meet based on their existing experience and existing staffing. Given the new regulations with a drop dead date of December 2024 for removal of all uncertified stoves and a soon to be required contingency measure to remove EPA certified stoves over 25 years of age, the need for change out and conversion funding will be in great demand. DEC is also utilizing the work DOT has already done for determining a location for the DMS that best fit within a reasonable budget and maximizes the impact by limiting the request to 2 locations instead of 4.

### **C. Budget Detail**

The table below represents the budget for the full project. The term of the project is expected to take a period of 5 years. Every attempt will be made to keep DOT costs within budget for the DMS. Any remaining funds from that

activity will be used to enhance the already existing ADEC compliance enforcement program, procure infrared cameras, conduct surveys, and oversee the grant. Also as a contingency, if partnering agencies are unable to implement the program as described, ADEC will operate the program using the same budgetary framework except that ADEC would use the DCCED portion of the budget to implement the program independently.

Budget Category	EPA Allocation	State or Territory Match	State Cost Share	Total
1. Personnel	\$398,501	0	0	\$398,501
2. Fringe Benefits	\$76,128	0	0	\$76,128
3. Travel	\$5,650	0	0	\$5,650
4. Supplies	\$437	0	0	\$437
5. Equipment	\$27,000	0	0	\$27,000
6. Contractual	\$1,039,080	0	0	\$1,039,080
7. Program Income	0	0	0	0
8. Other	\$13,075,401	0	0	\$13,075,40
<b>9. Total Direct Charges</b>	<b>\$14,622,197</b>	<b>\$0</b>	<b>\$0</b>	<b>\$14,622,197</b>
10. Indirect Charges	\$95,068	0	0	\$95,068
<b>Grand Total</b>	<b>\$14,717,265</b>	<b>\$0</b>	<b>\$0</b>	<b>\$14,717,265</b>

### Itemized Costs

#### Personnel

ADEC personnel costs include the staff time needed to implement the grant, estimated at 2,490 hours annually or 1.66 FTE annually for the five-year life of the grant.

ADEC staff is responsible for providing programmatic review of DOT/DCCED reports; regular meetings with DOT on outcomes and measures; management of the

Position Title	Total Estimated FY21 Base Salary	Total Per Year FTE	# of positions	# Years needed	Total	
					Total 5 year award Estimated FTE	Total Estimated 5 year Base Salary
Env Program Spec III - Non Point	\$ 63,894	0.08	1.00	5	0.40	\$ 25,558
Env Program Mgr II - Non Point	\$ 145,889	0.02	1.00	5	0.12	\$ 17,507
Env Program Mgr II - Compliance	\$ 95,486	0.02	1.00	5	0.08	\$ 7,639
Admin Ops Mgr I	\$ 108,636	0.04	1.00	5	0.20	\$ 21,727
Seasonal LTNP Environmental Program Tech #1, #2, #3	\$ 43,476	0.50	3.00	5	7.50	\$ 326,070
<b>Base Salary</b>					<b>8</b>	<b>\$ 398,501</b>

RSAs between ADEC and DOT/DCCED; preparing and submitting regular reports to the EPA; development and oversight of outreach and alert contract(s); and preparing and submitting the final report to the EPA at the conclusion of the project. Three seasonal temporary compliance technicians hired under this grant will allow for efficient low-cost compliance route observation during air quality alerts. During times not on alert surveillance, these staff will process additional administrative enforcement actions, conduct additional home inspection compliance assistance check-ups, and data management. Total cost for ADEC labor totals \$398,501. Should any funds not be needed for the DOT DMS portion and the compliance enforcement efforts, such changes will be reported to the EPA with updated budget tables.

#### Fringe Benefits

Benefits include: Leave cash-in, risk management, unemployment insurance, terminal leave, retirement benefit, health insurance, life insurance, legal trust fund, SBS (Supplemental Benefit System), Medicare. The fringe is the actual budgeted fringe cost for these individual positions in the upcoming budget year. Fringe total is \$76,128.

#### Travel

DEC will set-aside funding for one trip between Anchorage and Fairbanks to provide technical assistance on this project. Programmatic/management staff regularly travel to Fairbanks out of the Division's existing budget and will conduct in-person reviews with FNSB, DCCED, and DOT during those planned trips. This

<b>Estimated Travel (Based on past history)</b>						
Airfare: Avr Anchorage/Fairbanks	\$	600				
Hotel/Meals/Transporation (per day)	\$	265				
		<b># of Trips</b>	<b># of Nights</b>	<b>Total Per Year</b>	<b># of years</b>	<b>Total travel for 5 year grant</b>
<b>In-State Travel</b>						
Technical Assistance (1 trip) = \$600 + (2 x \$265)		1	2	\$ 1,130	5	\$ 5,650
<b>Total Travel</b>						<b>\$ 5,650</b>

\$5,650 total budget to cover 5 total trips ensures the Division can make a grant-specific trips when needed.

### Contractual Costs

Estimated Contractual Costs	Total
Vehicle Leases (\$5,000 per season x 1 vehicles x 5 seasons)	\$ 25,000
Smoke School (\$855 per person x 3 seasonal staff X 5 years)	\$ 12,825
Cell phone connection (\$35 per month x 1 per vehicle x 1 vehicles x 5 seasons)	\$ 175
Mobile Data/mifi plan (\$36 per month x 1 plan x 6 months x 5 seasons)	\$ 1,080
Outreach media/alert contract (\$200,000 x per season x 5 seasons)	\$ 1,000,000
See "Other" Tab for Contract/Subaward info	\$ -
<b>Total Contractual</b>	<b>\$ 1,039,080</b>

Direct contractual costs for ADEC include vehicle leases to accommodate additional compliance driving routes, annual smoke school training for seasonal staff, and cellular and mobile data connections for the employee on route, and outreach for

alerts and curtailment information all totaling \$1,039,080 over 5 years. There could be additional direct costs should there be remaining funds from DOT.

ADEC will issue Reimbursable Service Agreements (RSA) to DCCED and to DOT which is reflected in the budget under "Other" Costs as these are state agencies partnering with ADEC to complete the work.

### Supplies

ADEC is planning to purchase nominal cold weather safety equipment for the state vehicle, totaling \$437.

Estimated Supplies Costs	Total
One-Time Vehicle Safety Supplies for Cold Weather (1 vehicle)	\$ 437
<b>Total Supplies</b>	<b>\$ 437</b>

### Equipment

ADEC is planning direct equipment purchases of two infrared cameras from this award All equipment, in support of the sign installation, will be purchased through the agreement with DOT, annotated in the "Other" section below.

Estimated Equipment Costs	Total
2 -Advanced Theram Cameras for readings outside visible light hours and swappable lens package, MSRP (\$13,500 ea)	\$ 27,000
<b>Total Equipment</b>	<b>\$ 27,000</b>

### Other

There will be two subawards agreements from ADEC under this federal grant, they are broken into two direct recipients below. They total \$13,075,401 in "Other" costs.

### Other - DCCED

Reimbursable Service Agreement to State of Alaska Department of Commerce, Community & Economic Development (DCCED) to manage Sub-Award		
<b>PS &amp; Travel</b>	(Includes administrative staffing spread among 5 staff)	\$ 242,500
<b>Contractual</b>	(Includes travel for on-site inspections)	\$ 3,000
<b>Supplies</b>	(Administrative allocation for department-wide services)	\$ 3,500
<b>Indirect</b>	(General office supplies)	\$ 1,000
	(DCCED will not charge indirect on this RSA)	\$ -
	<b>Total DCCED Expenditures</b>	<b>\$ 250,000</b>

The RSA between ADEC and DCCED covers DCCED's personnel and fringe costs, travel, and supplies associated with the administration of the FNSB sub-award. This administrative route is necessary as ADEC does not have

legislative authority to issue sub-awards; therefore, funds and sub-award management responsibilities must be transferred to the state experts in sub granting: DCCED. These expenses will be reported through the contractual line, as that is the location such agreements are recorded in the State's accounting system.

DCCED personnel costs include a total of 3,000 hours for the five year life of the grant. Personnel hours are spread among five staff positions who will be responsible for the FNSB sub-grant oversight, issue resolution, administration, and progress and financial reports submitted to ADEC. DCCED staff will conduct and participate in on-site monitoring, fiscal compliance meetings, and sub-award closeout responsibilities and tasks. DCCED anticipates a small budget for general supplies and department-wide services associated with managing this sub-award. Below represents DCCED's direct costs:

To the right is a budget breakout and description of the \$10,367,822 provided by the grant to DCCED and sub-awarded to FNSB for SFBA Changeouts, conversions, removals and NOASH reduction:

Sub-Award from DCCED to Fairbanks North Star Borough (FNSB)		
<b>FNSB PS &amp; Fringe</b>	(none)	\$ -
<b>Travel</b>	(none)	\$ -
<b>Contractual</b>		
	SFBA change outs, Conversions, removals, NOASH reduction	\$ 9,425,293
<b>Supplies</b>	(none)	\$ -
<b>Indirect (10%)</b>		\$ 942,529
	<b>Total FNSB Expenditures</b>	<b>\$ 10,367,822</b>



DCCED will receive \$250,000 for direct costs and \$10,367,822 to award to FNSB for an RSA total of \$10,367,822.

### Other - DOT

The RSA between ADEC and DOT is for the procurement, construction, installation and maintenance of the highway signs at the two locations. DOT will be responsible for oversight and issue resolution of the day-to-day administration of the DOT portion of this project in accordance with Uniform Grant Guidelines and preparation of all progress and financial reports to ADEC, and general program oversight. This excludes design and construction labor hours as that is included in the project portion of the budget. ADEC staff will do on-site monitoring and close out of the DOT portion of the project as well as any administration of fiscal compliance meetings. The total RSA to DOT will be \$2,457,579.

Reimbursable Service Agreement to State of Alaska Department of Transportation (DOT)				
DOT PS & Fringe (includes 1,232.5 hours distributed among 9 - 10 DOT Full-Time Employees)				
1	Design	(Includes Planning, Design & Maintenance Staff)-excludes Construction administration, see item 15	\$	125,000
2	Travel	Construction & Maintenance support 5 yrs -Equipment \$9500 and \$5,500 labor)	\$	15,000
Contractual				
3		1-time Server Connection & Software Install (1 to 4 locations locations - same price assumed)	\$	35,000
4		Support Costs for Server & software (\$10k per year x 5 years)	\$	50,000
5		Electrical Design Consulting PSA Contract (\$50K for 1 location and 50% for second).	\$	75,000
6		Structural design DOT or Consultant (2 location/4 signs sized approximately 21' x 7' x 6') identical design	\$	75,000
7		NEPA Categorical Exclusion (Contingency) 1 location 15K and 5K to add second location	\$	20,000
8		Geotechnical work -by DOT or Consultant-TBD (\$26K foundation and \$10K contingency)	\$	36,000
9		Operation/Utility costs for electric & telecom (\$9,500 per year x 5 yr) x 2 locations=	\$	95,000
10		Display Pixel Fixture Components Repair Contingency	\$	25,000
11		Contingency (at this time-unanticipated work items)- e.g. possible trenching for fiberoptic line for CCTV cameras	\$	10,000
12	Supplies	Basic office supplies & printing	\$	-
13	Equipment	State of AK NR Maintenance & Operations Equipment support (all phases e.g. bucket truck & tools)	\$	15,000
(A) Subtotal items 1-13			\$	576,000

Construction contract (DOT Construction Section & Construction Company)				
14		Contract pay items (Engineering Estimate 3/17/20) Dual-sided signs (2x2 signs each/2 location)-29 pay items Includes procured materials shipping	\$	1,539,250
15		Construction Administration (DOT Construction section, inspection & Administration)-15%	\$	230,880
16		ICAP indirect agreement (4.75% of construction pay items and Construction Engineering total) Items 14 & 15 only	\$	84,082
(B) Subtotal items 14-16 (Phase 4)			\$	1,854,212
Total Contractual (A) + (B)			\$	2,430,212
17	Indirect	ICAP indirect agreement (variable% of PS & Fringe)-items 1-13 Design and support (\$937,260)	\$	27,360
TOTAL RSA to DOT			\$	2,457,572